

# FACT SHEET

United States Environmental Protection Agency (EPA)  
Region 10  
Park Place Building,  
1200 Sixth Avenue, OW-130  
Seattle, Washington 98101

Date:

NPDES Permit No : WA-005022-9  
Public Notice Start Date:  
Public Notice End Date:  
Technical Contact: Robert Grandinetti (206) 553-1283  
1-800-424-4372 ext. 1283 (within Washington, Alaska, Oregon, and  
Idaho)  
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PROPOSED REISSUANCE OF A NATIONAL POLLUTANT DISCHARGE ELIMINATION  
SYSTEM (NPDES) PERMIT TO DISCHARGE POLLUTANTS PURSUANT TO THE PROVISIONS  
OF THE CLEAN WATER ACT (CWA)

## City of Wapato

has applied for reissuance of a NPDES permit to discharge pollutants pursuant to the provisions of the CWA. This Fact Sheet includes (a) the tentative determination of the EPA to reissue the permit, (b) information on public comment, public hearing and appeal procedures, (c) the description of the current discharge, (d) a listing of tentative effluent limitations, schedules of compliance and other conditions, (e) a sketch or detailed description of the discharge location, and (f) a description of the proposed sludge disposal practices. We call your special attention to the technical material presented in the latter part of this document.

Persons wishing to comment on the tentative determinations contained in the proposed permit issuance may do so by the expiration date of the Public Notice. All written comments should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the expiration date of the Public Notice, the Director, Office of Water, will make final determinations with respect to the permit issuance. The tentative determinations contained in the draft permit will become final conditions if no substantive comments are received during the public notice period.

If no substantive comments are received, the permit will be effective immediately upon issuance. If comments are received, EPA will address the comments and issue the permit. The permit will become effective 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board within 30 days.

The proposed NPDES permit and other related documents are on file and may be inspected at the above address any time between 8:30 a.m. and 4:00 p.m., Monday through Friday. Copies and other information may be requested by writing to EPA at the above address to the attention of the Water Permits Section, or by calling (206) 553-0523. The draft permit and fact sheet are also available from the EPA Washington Operations Office, c/o State of Washington, Department of Ecology, P.O. Box 47600, Olympia, Washington 98504-7600.

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## TECHNICAL INFORMATION

### I. APPLICANT

City of Wapato

NPDES Permit No. WA-005022-9

Mailing Address:  
205 East Third Street  
Wapato, WA 98951

Facility Address:  
68172 Highway 97  
Wapato, WA 98951

Contact:

Lance Hoyt  
City of Wapato Public Works Director

### II. FACILITY INFORMATION:

#### A. Facility Description

The City of Wapato owns and operates a municipal sewage treatment facility that provides secondary treatment and disinfection of wastewater. The facility and receiving water are within the boundaries of the Yakama Indian Reservation. After treatment, the facility discharges the effluent to Drainage Way No. 2

The facility design flow is 1.16 million gallons per day (mgd) and has an actual average daily flow rate of 0.524 mgd. This facility supports a population of 5,135. The plant receives domestic wastewater from residential and commercial sources, as well as industrial wastewater from local fruit packing plants. The plant receives industrial waste from three non-categorical Significant Industrial Users (SIU). The three SIUs discharge an average of 0.046 mgd. The collection system has no combined storm water with sanitary wastewater sewers. A description of the facility's treatment process can be found in Appendix D. A map of this facility is included in Appendix A, showing the location of the facility and outfall.

#### B. Facility Background Information

##### 1. Current Facility

The influent wastewater flows through an electronic, in-line flow meter and into the headworks. The headworks contain a comminutor for grinding large influent solids, and a pre-aeration chamber for removing the larger, heavier material. From the headworks, the wastewater flows to a primary clarifier that removes settleable and floating materials. The primary clarifier effluent is pumped into two parallel Submerged Biological

Contactors (SBC). The SBC effluent is pumped to two parallel Rotating Biological Contactors (RBC) units containing two shafts each. The RBC and SBC units remove soluble organic material and provide the secondary treatment for the wastewater. Effluent from the RBC units flows into two parallel secondary clarifiers for removal of biological solids and then to the chlorine contact chambers for disinfection. The final effluent wastewater is then discharged into Drainage Way No. 2.

Settleable and floating solids, as well as biological waste solids from the RBC's, SBC's, and the primary and secondary clarifiers are pumped into the primary digester. This sludge is stabilized in the primary and secondary aerobic digesters and then dewatered in a centrifuge and on the sludge drying beds. The sludge is stockpiled on-site prior to disposal at the Cheyne municipal solid waste landfill.

2. Upgrade to Facility

The facility was required to meet the final effluent limits for chlorine by February 1, 2002. The facility has begun construction on a new disinfection system that will enable the facility to meet its chlorine limit. The new disinfection system is a chlorination/dechlorination system.

3. Compliance History

The facility upgrade from the previous permit was completed in mid March of 1998. The facility has had a total of 20 exceedances of their permit in the past five years. This includes 3 exceedances of the pH limit, which occurred in November 2000, October 1999, and August 1998. There were 13 months in which the chlorine limit of 0.02 mg/l were exceeded, these occurred in the months from February 2002 to present. There was 1 month in which the ammonia limit of 8.2 mg/l was exceeded, this occurred in December of 1998. There were 2 months in which the monthly fecal coliform limit of 100FC/100ml were exceeded, these occurred in May and November of 1998. There was one month in which the weekly fecal coliform limit of 200FC/100ml was exceeded, and this occurred in May of 1998.

4. Permit History

The current NPDES permit for the wastewater treatment plant was issued on April 29, 1998, and expired on April 30, 2003. Under federal law, specifically, the Administrative Procedures Act (APA), a federally issued NPDES permit is administratively extended (i.e., continues in force and effect) provided that the permittee submits a timely and complete application for a new permit prior to the expiration of the current permit. Since the City did submit a timely application (Standard Form A) that was received by EPA on November 18, 2002, for a new permit, the current permit was administratively extended.

### III. RECEIVING WATER

#### A. Outfall location

The treated effluent from the City of Wapato wastewater treatment facility is discharged from the outfall 001 located at:

Latitude 46 deg. 25 min. 59 sec

Longitude 120 deg. 25 min. 17 sec.

to Drainage Way No. 2.

#### B. Description of Receiving Water and Receiving Water Flow

Drainage Way No. 2 primarily carries irrigation return flows. Drainage Way No. 2 is within the Wapato Irrigation Project and eventually empties into the Yakima River via the Wanity Slough. The volume of flow changes in the drainage way according to whether it is the wet season or the dry season.

In the Spring and Summer of 2001 and 2002, the City of Wapato conducted monitoring of water quality and flow in Drainage Way No. 2. This data is presented in Appendix C. The data was collected monthly upstream and 50 and 300 feet downstream of the facility outfall.

In calculating effluent limits, conservative assumptions regarding the receiving water flow are made so that the resultant effluent limits are protective of water quality standards. A low receiving water flow and a peak future facility discharge (design flow) will be representative of the situation where dilution capability of the stream is restricted.

The Technical Support Document for Water Quality-based Toxics Control (TSD, EPA 1991) recommends the use of the lowest 7-day average flow expected to occur once in 10 years (7Q10) for effluent calculations. The State of Washington standards state that “mixing zone determinations shall consider critical discharge conditions” (WAC 173-201A-100(3)). The standards specify under the definition section that critical conditions may be assumed to be equal to the 7Q10 flow event unless determined otherwise by the Department. The applicable flow used to evaluate compliance with the criteria is the 7Q10 for both acute and chronic criteria.

There is flow data of Drainage Way No. 2 that was collected on a weekly basis by the facility from a sample point within 20 feet upstream of the facility outfall. This flow data is available from 1987 to present. This data set clearly shows the seasonal nature of flow in the drain, with no flow during the non-irrigation season (Nov. 1 through Mar. 31) and high flows during the irrigation season (Apr. 1 through Oct. 31). Flows range from 0 mgd in the winter months up to 151 mgd during the summer months. Due to the seasonality of the drainage way the flow for

the receiving water was split up into two separate season. These seasons are the Irrigation Season (Apr. 1 through Oct. 31), and the Non-rrigation Season (Nov. 1 through Mar. 31). The 7Q10 that was calculated and used in the calculations for the Irrigation Season is 11.723 MGD, and the 7Q10 for the Non-rrigation Season is 0 MGD.

The Drainage Way No. 2 is not listed as a water-quality limited segment, therefor, there are no issues of concern with a total maximum daily load review (TMDL). The drainage way is not part of the Yakima River TMDL so the City of Wapato has no waste load allocation (WLA) from the Yakima TMDL. The drainage way was not included in the Yakima TMDL and discharges to the drainage way are considered diluted before reaching the Yakima River.

#### C. Water Quality Standards

The facility and receiving water are within the boundaries of the Yakama Indian Reservation. The Washington State water quality standards only apply to waters of the State. The State does not have legal authority over tribal waters.

The Yakama Nation Environmental Protection Program is currently working to establish regulations for point sources that discharges on the Yakama Indian Reservation and water quality standards for waters on the Reservation. The Yakama Nation has not yet adopted standards, therefore, there are no standards that apply to this portion of Drainage Way No. 2. Furthermore, because Yakama Nation does not have delegated NPDES permit authority, EPA is the permitting authority on the Yakama Indian Reservation.

In situations where facilities are discharging into Indian Reservation waters, and the Indian Nation has not yet adopted water quality standards for that water body, it has been EPA's practice to refer to adjacent or downstream standards to the water body for the purpose of developing permit limitations and condition. Federal regulations 40 CFR 131.10(b) and 40 CFR 122.4(d) give EPA the authority to protect the waters downstream of the facility. In this permit, EPA referred to the State of Washington water quality standards in developing permit limits for discharge to Drainage Way No. 2.

The water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve (domestic water supply, fish and shellfish, recreation, etc.) The numeric and/or narrative water quality criteria are the criteria deemed necessary to support the beneficial use classification of each water body. The anti-degradation policy is the approach that is used to maintain and protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard

when existing quality just meets the standard.

In the State of Washington, water bodies are classified into one of five different classes. Each classification protects the water for specific uses and for specific water quality criteria. Classifications are found in the Water Quality Standards for Surface Waters of the State of Washington, WAC 173-201A-130 Specific Classifications - Freshwater. Drainage Way No. 2 is not directly classified in the standards, however, the regulations specify that all unclassified surface waters within the state shall be classified as Class A (WAC 173-201A-120 (6)). Class A designation under the State of Washington Water Quality Standards protects this water body for the following uses: water supply (domestic, industrial, agricultural), stock watering, fish and shellfish, wildlife habitat, recreation, and commerce and navigation.

#### IV. PROPOSED EFFLUENT LIMITATIONS

##### A. Basis for Effluent Limitations

In general, the Clean Water Act requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. A technology-based effluent limit requires a minimum level of treatment for municipal point source based on currently available treatment technologies. A water quality-based effluent limit is designed to ensure that the water quality standards of a water body are being met. The basis for the proposed effluent limits in the draft permit are provided in Appendix E.

##### B. Proposed Effluent Limitations

Table 1, Table 2 and the following list summarizes the effluent limitations that are in the draft permit.

1. The effluent pH range shall be between 6.5 and 8.5 standard units (s.u.).
2. For BOD5 and TSS, the monthly average effluent removal must not be less than 85 percent.
3. There must be no discharge of floating, suspended, or submerged matter of any kind in concentrations causing nuisance or objectionable conditions or that may impair designated beneficial uses.

<b>Table 1 Proposed Effluent Limitations Compared to Current Limitations for Outfall 001 during the Irrigation Season (April 1 - October 31)</b>						
Parameters	Average Monthly		Average Weekly		Maximum Daily	
	Proposed	Current	Proposed	Current	Proposed	Current
BOD <sub>5</sub> mg/l lbs/day	30 290	30 275	45 435	45 413	— —	— —
TSS mg/l lbs/day	30 290	30 275	45 435	45 413	— —	— —
Fecal coliform <sup>1</sup> colonies#/100ml	100	100	200	200	—	—
Total Ammonia as N <sup>2</sup> mg/l lbs/day	8.2 —	8.2 —	16 —	16 —	— —	— —
Total Ammonia as N <sup>3</sup> mg/l lbs/day	0.9 8.5	8.2 —	— —	— —	1.1 10.4	16 —
Total Residual Chlorine <sup>4</sup> mg/l	0.018	0.009	—	—	0.024	0.024
Footnotes 1. Fecal coliform organisms levels must both not exceed a geometric mean value of 100 colonies/100ml and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 200. 2. These Ammonia limits are in effect from the effective date of the Proposed Permit, and are in effect for four years and six months. 3. These Ammonia limits will be in effect 4 years and 6 months after the effective date of the Proposed Permit. 4. The effluent limits for chlorine are not quantifiable using EPA approved analytical methods. The permittee will be in compliance with the effluent limits provided the total chlorine residual is at or below the compliance evaluation level of 0.1 mg/l (100µg/l).						

<b>Table 2 Proposed Effluent Limitations Compared to Current Limitations for Outfall 001 during the Non-irrigation Season (November 1 - March 31)</b>						
Parameters	Average Monthly		Average Weekly		Maximum Daily	
	Proposed	Current	Proposed	Current	Proposed	Current
BOD <sub>5</sub> mg/l lbs/day	30 290	30 275	45 435	45 413	— —	— —
TSS mg/l lbs/day	30 290	30 275	45 435	45 413	— —	— —
Fecal coliform <sup>1</sup> colonies#/100ml	100	100	200	200	—	—
Total Ammonia as N <sup>2</sup> mg/l lbs/day	8.2 —	8.2 —	16 —	16 —		
Total Ammonia as N <sup>3</sup> mg/l lbs/day	0.9 9.1	— —	1.1 11.1	— —	— —	— —

<b>Table 2 Proposed Effluent Limitations Compared to Current Limitations for Outfall 001 during the Non-irrigation Season (November 1 - March 31)</b>						
Parameters	Average Monthly		Average Weekly		Maximum Daily	
	Proposed	Current	Proposed	Current	Proposed	Current
Total Residual Chlorine <sup>4</sup> mg/l	0.010	0.009	—	—	0.013	0.024
Footnotes 1. Fecal coliform organisms levels must both not exceed a geometric mean value of 100 colonies/100ml and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 200. 2. These Ammonia limits are in effect from the effective date of the Proposed Permit, and are in effect for four years and six months. 3. These Ammonia limits will be in effect 4 years and 6 months after the effective date of the Proposed Permit. 4. The effluent limits for chlorine are not quantifiable using EPA approved analytical methods. The permittee will be in compliance with the effluent limits provided the total chlorine residual is at or below the compliance evaluation level of 0.1 mg/l (100µg/l).						

### C. Compliance Schedule

The water quality criteria for ammonia are found in the Washington water quality standards for surface waters (WAC 173-201A-040). Ammonia limits that were calculated for the proposed limit are much more stringent than the current Ammonia limit. Therefore, a schedule of compliance is proposed for the City of Wapato and it is located in the Draft Permit. The current permit contains a performance based ammonia limit during the Irrigation Season, and does not limit Ammonia during the Non-irrigation. The Draft Permit contains interim limits that were the same as the City of Wapato's NPDES Permit issued on March 30, 1998, and which expired on April 1, 2003. However, the Draft Permit requires the facility to come into compliance with the new Ammonia limits in Tables 1 and 2 by 4 years and six months from the effective date of the Final Permit.

Until compliance with the effluent limits is achieved, at a minimum, the permittee must achieve compliance with the limits listed below:

Season	Monthly Average (mg/l)	Daily Max. (mg/l)
April 1 - October 31	8.2	16
November 1 - March 31	—	—

The permittee must submit an Annual Report of Progress which outlines the progress made towards reaching the compliance date for the Ammonia effluent limitations.

## V. PROPOSED MONITORING REQUIREMENTS

### A. Basis for Effluent and Receiving Water Monitoring

Section 308 of the Clean Water Act and federal regulations 40 CFR 122.44(i) require effluent monitoring in NPDES permits to determine compliance with effluent limitations. Section 308 also allows additional effluent and receiving water monitoring to gather data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality. The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) to EPA.

### B. Proposed Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Table 3 presents the proposed effluent monitoring requirements for the draft permit.

<b>Table 3 Proposed Monitoring Frequency of Effluent</b>			
Parameter	Sample Location	Sample Frequency	Sample Type
Flow mgd	Influent or effluent	continuous	recording
BOD <sub>5</sub> <sup>1,2</sup> mg/l	Influent and effluent	weekly	24 hour composite
TSS <sup>1,2</sup> mg/l	Influent and effluent	weekly	24 hour composite
pH S.U.	Effluent	daily	grab
Dissolved oxygen mg/l	Effluent	weekly	grab
Chlorine, Total Residual µg/l	Effluent	weekdays	grab
Fecal coliform #/100ml	Effluent	weekdays	grab
Temperature	Effluent	daily	grab
Total Ammonia as N, µg/l	Effluent	weekly	24 hour composite
Footnotes; 1. Effluent and Influent sampling to be done within the same 24 hour period. 2. 24 hour composite shall be collected in intervals of no less than 15 minutes apart (total 96 samples) in a 24 hour time period.			

In addition to the table above the current permit is requiring the effluent to be monitored for the parameters specified in Appendix B. These parameters are required to be monitored by 40 C.F.R. 122.21.(j).(4). to be submitted with the renewal application 180 days prior to expiration of the Final Permit. Each parameter is to be monitored a total of three times and all of the parameters shall be

sampled on the same day in each instance. The first sampling event shall be taken once during the months of January, February, or March of the first year of the Final Permit. The second sampling event shall be taken once during the months of April, March, or June of the second year of the Final Permit. The third and final event shall be taken once during the months of July, August, or September of the third year of the Final Permit. All parameters shall be sampled at the effluent.

C. Whole Effluent Toxicity Testing

The municipal application regulations require POTWs with design influent flows equal to or greater than 1.0 mgd, or POTWs with approved pretreatment programs, to submit results of whole effluent toxicity (WET) testing (40 CFR 122.21(j)(1)). The regulation requires 4 WET tests during the permit cycle to be submitted with the renewal application 180 days prior to expiration of the Final Permit. The draft permit requires that the first WET test be taken once during January, February, or March of the first year of the permit. The second WET test shall be taken once during April, May, or June of the second year of the permit. The third WET test shall be taken once during July, August, or September of the third year of the permit. The last WET test shall be taken once during October, November, or December of the fourth year of the permit.

D. Proposed Receiving Water Monitoring

The purpose of the receiving water monitoring is to determine receiving water quality conditions as part of the effort to evaluate the reasonable potential for the discharge to cause an instream excursion above water quality criteria (40 CFR 122.44). The instream monitoring station shall be located where the effluent and receiving water are fully mixed. Table 4 presents the proposed receiving water monitoring requirements for the draft permit.

Table 4 Proposed Receiving Water Monitoring				
Parameter	units	Sampling Frequency	Type of Sample	Location
pH	standard units	monthly	grab	Upstream and 2 Downstream
Flow	mgd	monthly	grab	Upstream
Temperature	°C	monthly	grab	Upstream and 2 Downstream
Total Ammonia as N	mg/l	monthly	grab	Upstream and 2 Downstream

DO	mg/l	monthly	grab	Upstream and 2 Downstream
TSS	mg/l	monthly	grab	Upstream and 2 Downstream

Downstream ammonia, pH, and temperature data will also be gathered to gain a better understanding of ammonia concentrations downstream of the facility near the edges of the potential acute and chronic mixing zones. Yakima River is listed on Washington's 303(d) list (a list of impaired waters compiled under Section 303(d) of the CWA). The 303(d) list identifies water bodies that do not meet or are not expected to meet water quality standards. Specifically, the Yakima River is listed in the State of Washington's 303(d) list for DO, and turbidity, therefore, EPA is proposing to include TSS and DO to be monitored.

The permittee will select the sampling locations and submit them to EPA and the Yakama Nation Environmental Protection Program for approval. The samples will be collected during the third and fourth year of the permit.

## VI SPECIALS CONDITIONS

### A. Quality Assurance Plan

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop a QAP to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The permittee is required to develop and implement a QAP and notify EPA within 120 days of the effective date of the final permit. The QAP must consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

### B. Best Management Practices (BMP) Plan

Section 402 of the Clean Water Act and federal regulations 40 CFR 122.44(k)(2) and (3) authorize EPA to require best management practices, or BMPs, in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. For municipal facilities, these measures are typically included in the facility's Operation & Maintenance (O&M) manual. These measures are important tools for waste minimization and pollution prevention.

The draft permit requires the City of Wapato to incorporate appropriate BMPs into their O&M manual for their POTW within 180 days of the effective date of the final permit. Specifically, the City of Wapato should consider spill prevention and control, optimization of chlorine and chemical use, public education aimed at controlling the introduction of household hazardous materials to the sewer system,

and water conservation. To the extent that any of these issues have already been addressed in the facility's current O&M manual, the City of Wapato need only reference the O&M manual in the BMP plan. The BMP plan must be revised as new practices are developed for the facility.

C. Sewage Sludge

Section 405 of the Clean Water Act requires NPDES permits to include sewage sludge use and disposal standards unless these requirements are included in another permit. However, the sewage sludge standards at 40 CFR Part 503 are self-implementing which means the permittee is required to comply with them whether or not they have an NPDES permit that includes sewage sludge requirements. Since EPA Region 10 has recently decided to separate wastewater and sewage sludge permitting, sewage sludge requirements are not included in this draft permit. EPA will issue a sludge only permit to this facility at a later date.

Until the issuance of a sludge only permit, the facility's sludge activities will continue to be subject to the national sewage sludge standards and any requirements of the State. The Part 503 regulations require that the permittee have a current sewage sludge application on file with EPA.

VII OTHER LEGAL REQUIREMENTS

A. Endangered Species

Section 7(a) and (c) of the Endangered Species Act requires federal agencies to request a consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species. EPA has requested a listing of threatened and endangered species in the vicinity of the Wapato Wastewater Treatment facility from NMFS and USFWS. The website for NMFS indicated that the Middle Columbia River steelhead (*O. mykiss*) as a threatened species under ESA in the Yakima River. A letter from the USFWS dated April 25, 2003, indicated that the bald eagle (*Haliaeetus leucocephalis*), Bull trout (*Salvelinus confluentus*), and Ute ladies'-tresses (*Spiranthes diluvialis*) listed as threatened, may occur in the vicinity of the facility. No other species are listed or proposed for listing as threatened or endangered under their jurisdiction, in the vicinity of the facility. EPA has determined that the discharge for the Wapato Wastewater Treatment Plant will not adversely affect the listed species. See Appendix G for further details.

B. Essential Fish Habitat

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult

with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. EPA has tentatively determined that the reissuance of this permit will not adversely affect any EFH species in the vicinity of the discharge, therefore, consultation is not required for this action. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to final reissuance of this permit. See Appendix H for further details.

C. Water Quality Standards Certification

Since the discharge is from a facility located within the boundaries of the Yakama Indian Reservation, the provisions of Section 401 of the Clean Water Act requiring state certification of the permit do not apply.

D. Interstate Waters

Under 40 CFR 124.10 (c)(1)(iii), EPA must give notice of this permit action to any affected state. Notice has been given to Washington Department of Ecology and other Washington state agencies (as defined in this regulation) potentially impacted by this action. A copy of the proposed permit action has also been provided to the Yakama Indian Tribe, Bureau of Indian Affairs, and Bureau of Land Management.

E. Standard Permit Provisions

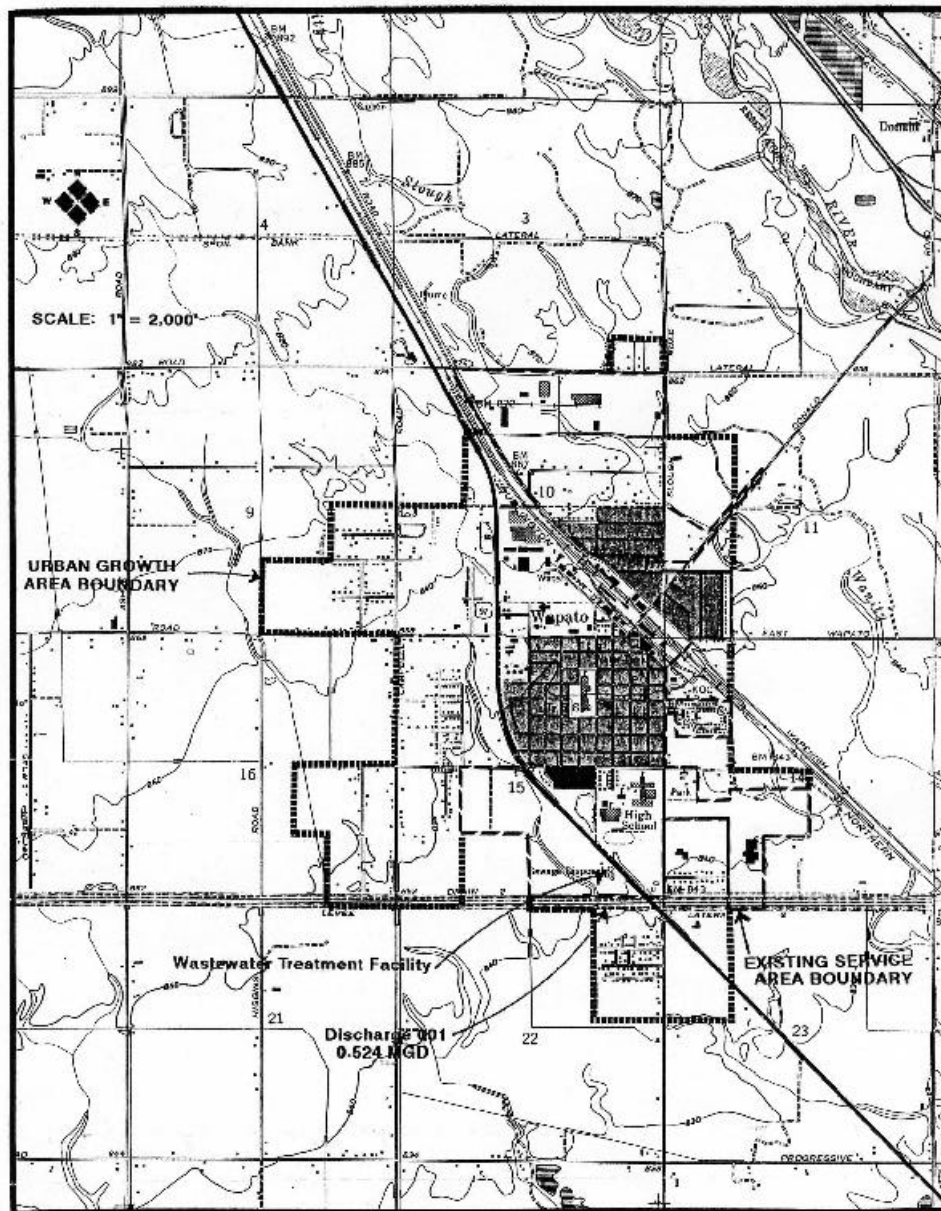
Sections II, III, IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

F. Permit Expiration

Section 402(1)(B) of the Clean Water Act require that NPDES permits are issued for a period not to exceed five years, therefore, this permit will expire five years from the effective date of the permit.



## APPENDIX A - CITY OF WAPATO MAP OF FACILITY



LOCATION MAP

City of Wapato Wastewater Treatment Facility

September 25, 2002

Figure 1



## APPENDIX B - PROPOSED EFFLUENT MONITORING

<b>Table B-1 Proposed Monitoring Frequency of Effluent</b>	
<b>Parameter</b>	<b>Sample Type</b>
Nitrate/Nitrite, <sup>1</sup> mg/l	24 hour composite
Kjeldahl Nitrogen, <sup>1</sup> mg/l	24 hour composite
Oil and Grease, mg/l	grab
Phosphorous, <sup>1</sup> mg/l	24 hour composite
Total Dissolved Solids, <sup>1</sup> mg/l	24 hour composite
<b>Metals, Cyanide and total phenols</b>	
Antimony, <sup>1,2</sup> µg/l	24 hour composite
Arsenic, <sup>1,2</sup> µg/l	24 hour composite
Beryllium, <sup>1,2</sup> µg/l	24 hour composite
Cadmium, <sup>1,2</sup> µg/l	24 hour composite
Chromium, <sup>1,2</sup> µg/l	24 hour composite
Copper, <sup>1,2</sup> µg/l	24 hour composite
Lead, <sup>1,2</sup> µg/l	24 hour composite
Mercury, <sup>1,2</sup> µg/l	24 hour composite
Nickel, <sup>1,2</sup> µg/l	24 hour composite
Selenium, <sup>1,2</sup> µg/l	24 hour composite
Silver, <sup>1,2</sup> µg/l	24 hour composite
Thallium, <sup>1,2</sup> µg/l	24 hour composite
Zinc, <sup>1,2</sup> µg/l	24 hour composite
Cyanide total, µg/l	grab
Total phenolic compounds,µg/l	grab
<b>Volatile Organic Compounds</b>	
Acrolein,µg/l	grab
Acrylonitrile,µg/l	grab
Benzene,µg/l	grab
Bromoform,µg/l	grab
Carbon tetrachloride,µg/l	grab
Chlorobenzene,µg/l	grab

<b>Table B-1 Proposed Monitoring Frequency of Effluent</b>	
<b>Parameter</b>	<b>Sample Type</b>
Chlorodibromomethane,µg/l	grab
Chloroethane,µg/l	grab
2-chloroethylvinyl ether,µg/l	grab
Chloroform,µg/l	grab
Dichlorobromomethane,µg/l	grab
1,1-dichloroethane,µg/l	grab
1,2-dichloroethane,µg/l	grab
Trans-1,2-dichloroethylene,µg/l	grab
1,1-dichloroethylene,µg/l	grab
1,2-dichloropropane,µg/l	grab
1,3-dichloropropylene,µg/l	grab
Ethylbenzene,µg/l	grab
Methyl bromide,µg/l	grab
Methyl chloride,µg/l	grab
Methylene chloride,µg/l	grab
1,1,2,2-tetrachloroethane,µg/l	grab
Tetrachloroethylene,µg/l	grab
Toluene,µg/l	grab
1,1,1-trichloroethane,µg/l	grab
1,1,2-trichloroethane,µg/l	grab
Trichloroethylene,µg/l	grab
Vinyl chloride,µg/l	grab
<b>Acid-extractable compounds</b>	
P-chloro-m-creso, <sup>1</sup> µg/l	24 hour composite
2-chlorophenol, <sup>1</sup> µg/l	24 hour composite
2,4-dichlorophenol, <sup>1</sup> µg/l	24 hour composite
2,4-dimethylphenol,µg/l	24 hour composite
4,6-dinitro-o-cresol, <sup>1</sup> µg/l	24 hour composite
2,4-dinitrophenol, <sup>1</sup> µg/l	24 hour composite

Table B-1 Proposed Monitoring Frequency of Effluent	
Parameter	Sample Type
2-nitrophenol, <sup>1</sup> µg/l	24 hour composite
4-nitrophenol, <sup>1</sup> µg/l	24 hour composite
Pentachlorophenol, <sup>1</sup> µg/l	24 hour composite
Phenol, <sup>1</sup> µg/l	24 hour composite
2,4,6-trichlorophenol, <sup>1</sup> µg/l	24 hour composite
Base-neutral compounds	
Acenaphthene, <sup>1</sup> µg/l	24 hour composite
Acenaphthylene, <sup>1</sup> µg/l	24 hour composite
Anthracene, <sup>1</sup> µg/l	24 hour composite
Benzidine, <sup>1</sup> µg/l	24 hour composite
Benzo(a)anthracene, <sup>1</sup> µg/l	24 hour composite
Benzo(a)pyrene, <sup>1</sup> µg/l	24 hour composite
3,4 benzofluoranthene, <sup>1</sup> µg/l	24 hour composite
Benzo(ghi)perylene, <sup>1</sup> µg/l	24 hour composite
Benzo(k)fluoranthene, <sup>1</sup> µg/l	24 hour composite
Bis (2-chloroethoxy) methane, <sup>1</sup> µg/l	24 hour composite
Bis (2-chloroethyl) ether, <sup>1</sup> µg/l	24 hour composite
Bis (2-chloroisopropyl) ether, <sup>1</sup> µg/l	24 hour composite
Bis (2-ethylhexyl) phthalate, <sup>1</sup> µg/l	24 hour composite
4-bromophenyl phenyl ether, <sup>1</sup> µg/l	24 hour composite
Butyl benzyl phthalate, <sup>1</sup> µg/l	24 hour composite
2-chloronaphthalene, <sup>1</sup> µg/l	24 hour composite
4-chlorophenyl phenyl ether, <sup>1</sup> µg/l	24 hour composite
Chrysene, <sup>1</sup> µg/l	24 hour composite
Di-n-butyl phthalate, <sup>1</sup> µg/l	24 hour composite
Di-n-octyl phthalate, <sup>1</sup> µg/l	24 hour composite
Dibenzo(a,h)anthracene, <sup>1</sup> µg/l	24 hour composite
1,2-dichlorobenzene, <sup>1</sup> µg/l	24 hour composite
1,3-dichlorobenzene, <sup>1</sup> µg/l	24 hour composite

Table B-1 Proposed Monitoring Frequency of Effluent	
Parameter	Sample Type
1,4-dichlorobenzene, <sup>1</sup> µg/l	24 hour composite
3,3-dichlorobenzidine, <sup>1</sup> µg/l	24 hour composite
Diethyl phthalate, <sup>1</sup> µg/l	24 hour composite
Dimethyl phthalate, <sup>1</sup> µg/l	24 hour composite
2,4-dinitrotoluene, <sup>1</sup> µg/l	24 hour composite
2,6-dinitrotoluene, <sup>1</sup> µg/l	24 hour composite
1,2-diphenylhydrazine, <sup>1</sup> µg/l	24 hour composite
Fluoranthene, <sup>1</sup> µg/l	24 hour composite
Fluorene, <sup>1</sup> µg/l	24 hour composite
Hexachlorobenzene, <sup>1</sup> µg/l	24 hour composite
Hexachlorobutadiene, <sup>1</sup> µg/l	24 hour composite
Hexachlorocyclo-pentadiene, <sup>1</sup> µg/l	24 hour composite
Hexachloroethane, <sup>1</sup> µg/l	24 hour composite
Indeno(1,2,3-cd)pyrene, <sup>1</sup> µg/l	24 hour composite
Isophorone, <sup>1</sup> µg/l	24 hour composite
Naphthalene, <sup>1</sup> µg/l	24 hour composite
Nitrobenzene, <sup>1</sup> µg/l	24 hour composite
N-nitrosodi-n-propylamine, <sup>1</sup> µg/l	24 hour composite
N-nitrosodimenthylamine, <sup>1</sup> µg/l	24 hour composite
N-nitrosodiphenylamine, <sup>1</sup> µg/l	24 hour composite
Phenanthrene, <sup>1</sup> µg/l	24 hour composite
Pyrene, <sup>1</sup> µg/l	24 hour composite
1,2,4,-trichlorobenzene, <sup>1</sup> µg/l	24 hour composite
Footnotes; 1. 24 hour composite shall be collected in intervals of no less than 15 minutes apart (total 96 samples) in a 24 hour time period. 2. Metals are to be analyzed as total recoverable.	

# APPENDIX C - CITY OF WAPATO RECEIVING WATER DATA

<b>Upstream Stations</b>							
Date	pH (su)	Temperature (°C)	Total Ammonia (as N) (mg/l)	Flow (cfs)	TSS (mg/l)	BOD (mg/l)	DO (mg/l)
10-May-01	7.7	21.0	0.5	51.5	44.0	4.2	9.4
21-Jun-01	7.8	24.0	1.0	63.75	31.0	6.6	8.7
19-Jul-01	7.6	21.2	1.4	68.0	21.0	no result	8.8
9-Aug-01	7.9	23.0	<0.1	77.0	13.0	<1	9.4
20-Sep-01	7.6	22.0	no result	68.0	20.0	<1	9.3
11-Oct-01	7.6	12.6	0.1	28.5	77.0	<1.4	11.3
25-Apr-02	7.6	15.8	0.13	87.0	72.0	4.3	11.4
23-May-02	—	—	—	—	—	—	—
20-Jun-02	7.3	18.0	0.3	234.0	27.0	<6.0	10.6
25-Jul-02	6.9	22.0	0.4	234.0	17.0	3.1	9.3
22-Aug-02	6.9	18.0	0.3	>234	10.0	1.0	9.0
11-Sep-02	6.5	18.8	0.5	77.0	8.0	0.7	8.7
17-Oct-02	7.6	15.0	0.2	28.5	0.3	2.5	12.1
<b>Max</b>	<b>7.9</b>	<b>24.0</b>	<b>1.4</b>	<b>234.0</b>	<b>77.0</b>	<b>6.6</b>	<b>12.1</b>
<b>Min.</b>	<b>6.5</b>	<b>12.6</b>	<b>0.1</b>	<b>28.5</b>	<b>0.3</b>	<b>0.7</b>	<b>8.7</b>
<b>Avg.</b>	<b>7.4</b>	<b>19.3</b>	<b>0.5</b>	<b>92.5</b>	<b>28.4</b>	<b>3.2</b>	<b>9.8</b>

<b>50 Feet Downstream</b>					
Date	pH (su)	Temperature (°C)	Total Ammonia (as N) (mg/l)	BOD (mg/l)	DO (mg/l)
10-May-01	7.9	20.0	0.4	4.8	9.6
21-Jun-01	7.9	25.0	1.0	6.6	8.2
19-Jul-01	7.5	21.4	2.0	no result	8.8
9-Aug-01	7.9	24.0	<0.1	<1	9.1
20-Sep-01	7.5	23.0	no result	<1	9.4
11-Oct-01	7.6	14.0	0.1	<1.8	11.2
25-Apr-02	7.7	15.8	0.12	4.3	11.5
23-May-02	—	—	—	—	—
20-Jun-02	7.3	18.0	0.1	<6.0	10.7
25-Jul-02	7.3	23.0	0.3	2.5	9.3
22-Aug-02	7.0	19.0	0.1	0.2	9.2
11-Sep-02	6.7	18.8	0.5	1.0	8.8
17-Oct-02	7.7	16.0	0.17	1.5	11.6
<b>Max</b>	<b>7.9</b>	<b>25.0</b>	<b>2.0</b>	<b>6.6</b>	<b>11.6</b>
<b>Min.</b>	<b>6.7</b>	<b>14.0</b>	<b>0.1</b>	<b>0.2</b>	<b>8.2</b>
<b>Avg.</b>	<b>7.5</b>	<b>19.8</b>	<b>0.5</b>	<b>3.0</b>	<b>9.8</b>

<b>300 Feet Downstream</b>					
Date	pH (su)	Temperature (°C)	Total Ammonia (as N) (mg/l)	BOD (mg/l)	DO (mg/l)
10-May-01	8.6	20.0	0.1	6.6	9.7
21-Jun-01	8.0	26.0	0.1	3.6	8.0
19-Jul-01	7.6	21.4	0.3	no result	8.7
9-Aug-01	8.0	24.0	<0.1	<1	9.0
20-Sep-01	7.6	23.0	no result	<1	9.5
11-Oct-01	7.6	14.2	0.1	<2.0	11.3
25-Apr-02	7.8	15.9	0.14	5.2	11.5
23-May-02	—	—	—	—	—
20-Jun-02	7.4	19.0	0.1	<6.0	10.7
25-Jul-02	7.3	23.0	0.1	1.3	9.3
22-Aug-02	7.0	19.0	0.1	0.5	9.2
11-Sep-02	6.9	19.4	0.5	0.9	9.0
17-Oct-02	7.7	16.0	0.17	1.5	11.6
<b>Max</b>	<b>8.6</b>	<b>26.0</b>	<b>0.5</b>	<b>6.6</b>	<b>11.6</b>
<b>Min.</b>	<b>6.9</b>	<b>14.2</b>	<b>0.1</b>	<b>0.5</b>	<b>8.0</b>
<b>Avg.</b>	<b>7.6</b>	<b>20.1</b>	<b>0.2</b>	<b>2.8</b>	<b>9.8</b>

## APPENDIX D - CITY OF WAPATO WASTE STREAMS AND TREATMENT PROCESSES

### I. Discharge Composition

In its NPDES application, the City of Wapato reported the pollutants listed in Table D-1 as being detected in its discharge from outfall 001. The toxic and conventional pollutant categories are defined in the regulations (40 CFR 401.15 and 401.16, respectively). The category of nonconventional pollutants includes all pollutants not included in toxic or conventional categories.

Table D-1 Pollutants Detected in Discharge		
Pollutant Type	Parameter	Maximum Reported Concentration
Conventional	5-day biochemical oxygen demand (BOD5), weekly average	42 mg/l 215 lbs/day
	Total suspended solids (TSS) weekly average	44 mg/l 227 lbs/day
	pH, min - max	6.4 - 7.6
	Fecal coliform bacteria weekly average	860 FC/100ml
Non-Conventional	Chlorine, daily average	1 mg/l
	Ammonia, weekly average	15.8 mg/l
Toxic	Requirement to sample in new Permit	N/A

### II Treatment Process

The following is a summary of the treatment processes at the City of Wapato facility:

The influent wastewater flows through an electronic, in-line flow meter and into the headworks.

The headworks contain a comminutor for grinding large influent solids, and a pre-aeration chamber for removing the larger, heavier material. From the headworks, the wastewater flows to a primary clarifier that removes settleable and floating materials. The primary clarifier effluent is pumped into two parallel Submerged Biological Contactors (SBC). The SBC effluent is pumped to two parallel Rotating Biological Contactors (RBC) units containing two shafts each. The RBC and SBC units remove soluble organic material and provide the secondary treatment for the wastewater. Effluent from the RBC units flows into two parallel secondary clarifiers for removal of biological solids and then to the chlorine contact chambers for disinfection. The final effluent wastewater is then discharged into Drainage Way No. 2.

Settleable and floating solids, as well as biological waste solids from the RBC's, SBC's, and the

primary and secondary clarifiers are pumped into the primary digester. This sludge is stabilized in the primary and secondary aerobic digesters and then dewatered in a centrifuge and on the sludge drying beds. The sludge is stockpiled on-site prior to disposal at the Cheyne municipal solid waste landfill.

## APPENDIX E - BASIS FOR EFFLUENT LIMITATIONS

### I. Statutory and Regulatory Basis for Limits

Sections 101, 301(b), 304, 308, 401, 402, and 405 of the Clean Water Act provide the basis for the effluent limitations and other conditions in the draft permit. The EPA evaluates discharges with respect to these sections of the CWA and the relevant NPDES regulations to determine which conditions to include in the draft permit.

In general, the EPA first determines which technology-based limits must be incorporated into the permit. EPA then evaluates the effluent quality expected to result from these controls, to see if it could result in any exceedances of the water quality standards in the receiving water. If exceedances could occur, EPA must include water quality-based limits in the permit. The draft permit limits reflect whichever requirements (technology-based or water quality-based) are more stringent. The limits that EPA is proposing in the draft permit are found in Section IV in the body of this fact sheet. This Appendix describes the technology-based and water quality-based evaluation for the City of Wapato.

### II. Technology-based Evaluation

The 1972 Clean Water Act required publicly owned treatment works (POTWs) to meet performance-based requirements based on available wastewater treatment technology. Section 301 of the Act established a required performance level, referred to as “secondary treatment,” that all POTWs were required to meet by July 1, 1977.

More specifically, Section 301(b)(1)(B) of the Clean Water Act requires that EPA develop secondary treatment standards for POTWs as defined in Section 304(d)(1) of the CWA. Based on this statutory requirement, EPA developed secondary treatment regulations which are specified in 40 CFR Part 133.102. These technology-based regulations apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by secondary treatment in terms of five-day biochemical oxygen demand (BOD<sub>5</sub>), total suspended solids (TSS), and pH and have been included in Table E-1

<b>Table E-1: Secondary Treatment Requirements</b>			
<b>Parameter</b>	<b>Average Monthly</b>	<b>Average Weekly</b>	<b>Percent Removal</b>
BOD <sub>5</sub>	30 mg/l	45 mg/l	85%
TSS	30 mg/l	45 mg/l	85%
pH	between 6.0 and 9.0 standard units		

BOD<sub>5</sub> and TSS, mass based limits: Federal regulations at (40 CFR § 122.45 (f)) require BOD and TSS limitations to be expressed as mass based limits using the design flow of the facility. The loading is calculated as follows: concentration X design flow X conversion factor of 8.34.

BOD<sub>5</sub> and TSS loading, monthly average = 30 mg/l X 1.16 mgd X 8.34 = 290 lbs/day  
BOD<sub>5</sub> and TSS loading, weekly average = 45 mg/l X 1.16 mgd X 8.34 = 435 lbs/day

### III. Water Quality-based Evaluation

In addition to the technology-based limits discussed above, EPA evaluated the discharge to determine compliance with Section 301(b)(1)(C) of the Clean Water Act. This section requires the establishment of limitations in permits necessary to meet water quality standards by July 1, 1977.

The regulations at 40 CFR 122.44(d)(1) implement section 301(b)(1)(C) of the Clean Water Act. These regulations require that NPDES permits include limits for all pollutants or parameters which “are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including narrative criteria for water quality.” The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation (WLA).

In determining whether water quality-based limits are needed and developing those limits when necessary, EPA uses the approach outlined below:

- A. Determine the appropriate water quality criteria
- B. Determine whether there is “reasonable potential” to exceed the criteria
- C. If there is “reasonable potential”, develop a WLA
- D. Develop effluent limitations based on WLA

The following sections provide a detailed discussion of each step. Appendix E provides example calculations to illustrate how these steps are implemented.

#### A. Determine Water Quality Criteria

The first step in developing water quality-based limits is to determine the applicable water quality criteria. As discussed in Section III.C of the Fact Sheet, Washington State water quality standards are applicable for this permit. The State water quality standards are found at Chapter 173-201A WAC. The applicable criteria are determined based on the beneficial uses of the receiving water as identified in Section III, Receiving Water, of the Fact Sheet. For any given pollutant, different uses may have different criteria. To protect all beneficial uses, the permit limits are based on the most stringent of the water quality criteria applicable to those uses.

#### B. Reasonable Potential Evaluation

To determine if there is “reasonable potential” to cause or contribute to an exceedances of the water quality criteria for a given pollutant, the EPA compares applicable water quality criteria to the maximum expected receiving water concentrations for a particular pollutant. If the expected receiving water concentration exceeds the criteria, there is “reasonable

potential” and a water quality-based effluent limit must be included in the permit.

EPA used the recommendations in Chapter 3 of the Technical Support Document for Water Quality-based Toxics Control (TSD, EPA 1991) to conduct this “reasonable potential” analysis for the City of Wapato Wastewater Facility. An example reasonable potential (RP) analysis for chlorine is found in Appendix F, Step 2.

The maximum expected receiving water concentration  $C_d$  is determined using the following mass balance equation.

$$C_d \times Q_d = (C_e \times Q_e) + (C_u \times MZ \times Q_u) \quad \text{or}$$

$$C_d = \frac{(C_e \times Q_e) + (C_u \times MZ \times Q_u)}{Q_d}$$

where,

- $C_d$  = receiving water concentration downstream of the effluent discharge
- $C_e$  = maximum projected effluent concentration  
= maximum reported effluent value X reasonable potential multiplier
- $Q_e$  = maximum effluent flow
- $C_u$  = upstream concentration of pollutant
- $Q_d$  = flow downstream of the effluent discharge  
=  $Q_e + (MZ \times Q_u)$
- $Q_u$  = upstream flow
- MZ = Mixing Zone; the mixing zone allows for 25 % of the upstream flow for chronic value, and 2.5% of the upstream flow for the acute value

Section 1 through 4 below discusses each of the factors used in the mass balance equation to calculate  $C_d$ . Section 5 discusses the actual “reasonable potential” calculation for the City of Wapato’s discharge.

#### 1. Effluent Concentration ( $C_e$ )

The maximum projected effluent concentration ( $C_e$ ) in the mass balance equation is represented by the 99<sup>th</sup> percentile of the effluent data set, calculated using the statistical approach recommended in the TSD. The 99<sup>th</sup> percentile effluent concentration is calculated by multiplying the maximum reported effluent concentration by a reasonable potential multiplier (RPM). The reasonable potential multiplier accounts for uncertainty in the data. The multiplier decreases as the number of data points increases and variability of the data decreases. Variability is measured by the coefficient of variation (CV) of the data. When there are not enough data to reliably determine a CV, the TSD recommends using 0.6 as a default value. A partial listing of reasonable potential multipliers can be found in Table 3-1 of the TSD.

EPA evaluated the most recent City of Wapato permit application and discharge monitoring reports (DMRs) from May 1998 through February 2003 to determine the maximum reported effluent concentrations. See Table E-2, and E-3 in section 5, below, for a summary of maximum reported effluent concentrations, reasonable potential multipliers, and maximum projected effluent concentrations.

2. Effluent Flow

The effluent flow used in the equation is the facility's design flow of the facility of 1.16 mgd.

3. Upstream Concentration ( $C_u$ )

The upstream concentration in the mass balance equation is based on a reasonable worst-case estimate of the pollutant concentration upstream from the City of Wapato's discharge. For criteria that are expressed as maxima (for example, ammonia), the 95<sup>th</sup> percentile of the ambient data is generally used as an estimate of worst-case. These percentiles were calculated for the data submitted by the City of Wapato. Where there were no data to determine the ambient concentration, zero was used in the mass balance equation.

4. Upstream Flow

Dischargers are generally not authorized to use the entire upstream flow for dilution of their effluent. Instead, the standards contain the following considerations on mixing zones for determining compliance with chronic criteria:

No mixing zone shall be granted unless the supporting information clearly indicates the mixing zone would not have a reasonable potential to cause a loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses of the water body, result in damage to the ecosystem, or adversely affect public health as determined by the department.

The size of the mixing zone and the concentration of pollutants present shall be minimized.

The size of the mixing zone shall comply with the following:

- Not to extend in a downstream direction for a distance from the discharge greater than 300 feet plus depth of water over the discharge, or extended upstream for a distance of over one hundred feet.
- Not to utilize greater than 25% of the flow.

- Not occupy greater than 25% of the width of the water body.
- For the acute criteria, the mixing zone shall not utilize greater than 2.5% of the stream.

To simplify the calculations for this particular permit, 25% of stream flow for chronic criteria (25% of the 7Q10), and 2.5% (2.5% of the 7Q10) of stream flow for acute criteria, were used in a mass-balanced equation in order to determine facility effluent limits. As stated in section III.B of the Fact Sheet the 7Q10 is 11.723 MGD during the Irrigation Season (Apr. 1 through Oct. 31), and 0 MGD for the Non-rrigation Season (Nov. 1 through March 31).

#### 5. “Reasonable Potential” Calculation

Table E-2 and E-3 summarizes the data, multipliers, and criteria used to determine “reasonable potential” to exceed criteria. In Appendix F, Step 2 provides example calculations for determining the reasonable potential to exceed the criterion. The projected downstream concentration is compared to the most stringent criterion and when the downstream concentration is larger than the most stringent criterion that parameter must have a limit in order to prevent an exceedance of the Water Quality Standareds. Limits have been put into the permit for fecal coliform, chlorine, ammonia, and pH. Section IV, below, provides a detailed discussion of the development of water quality-based effluent limitations for specific pollutants.

**TABLE E-2: Reasonable Potential Calculations for the Irrigation Season (April 1 through October 31)**

Parameter	Maximum Reported Conc	Number of Samples	CV	Reasonable Potential Multiplier	Maximum Projected Effluent Conc (C <sub>e</sub> )	Projected Downstream Conc (C <sub>d</sub> )		Most Stringent Criterion		Reasonable Potential to Exceed?
						acute	chronic	acute	chronic	
Chlorine, mg/l	1	56	0.14	1.14	1.14	0.91	0.32	0.019	0.011	YES
Ammonia, mg/l	15.8	21	0.6	2.3	36.4	24.96	11.19	7.2	1.3	YES

**TABLE E-3: Reasonable Potential Calculations for the Non-irrigation Season (November 1 through March 31)**

Parameter	Maximum Reported Conc	Number of Samples	CV	Reasonable Potential Multiplier	Maximum Projected Effluent Conc (C <sub>e</sub> )	Projected Downstream Conc (C <sub>d</sub> )		Most Stringent Criterion		Reasonable Potential to Exceed?
						acute	chronic	acute	chronic	
Chlorine, mg/l	1	56	0.14	1.14	1.14	1.14	1.14	0.019	0.011	YES
Ammonia <sup>1</sup> , mg/l	15.8	21	0.6	2.3	36.4	36.38	30.95	11.9	1.61	YES

### C. Wasteload Allocation and Long Term Average Concentration Development

Once EPA has determined that a water quality-based limit is required for a pollutant, the first step in determining a permit limit is development of a wasteload allocation (WLA) for the pollutant. A WLA is the concentration (or loading) of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water. Waste Load Allocations can be calculated in different ways such as: based on a mixing zone; based on a WLA established as part of a TMDL; or based on meeting water quality criteria at “end-of-pipe.” WLAs for this permit were calculated in two ways: based on a mixing zone for chlorine and ammonia during the Irrigation Season and based on meeting water quality criteria at “end-of-pipe” for pH, fecal coliform, ammonia, and chlorine during the Non-irrigation Season. Appendix F, Step 3 describes an example calculation to determine waste load allocations and long term allocations.

The following paragraphs briefly summarize the three methods for developing WLA.

#### 1. Mixing zone-based WLA

A mixing zone is a transition region where effluent discharge blends into the receiving stream. The State of Washington water quality standards authorize mixing zones and provide mixing zone requirements (WAC 173-201A-100). By regulation, water quality criteria shall not be violated outside of the boundary of a mixing zone. A number of other conditions are outlined in the regulation including the requirement that the discharger must be implementing all known, available, and reasonable methods of prevention, control, and treatment (AKART) before being authorized a mixing zone and that critical discharge conditions (i.e., conservative assumptions) be considered in determining the mixing zone.

The Washington regulation states that the mixing zone shall not utilize more than twenty-five percent (25%) of the stream flow and, for acute criteria, the mixing zone shall not utilize greater than 2.5% of the stream flow. The regulation also limits mixing zone dimensions upstream and downstream from the discharge point as well as limiting the percent of the width of the receiving water that is available for mixing. These dimensions of a mixing zone are determined from modeling the receiving water and the effluent.

To simplify the calculations for this particular permit, 25% of stream flow for chronic criteria, and 2.5% stream flow for acute criteria, were used in a mass balance equation in order to determine facility effluent limits. The lack of specific data on Drainage Way No. 2 near the outfall prevented a more detailed analysis of the resulting mixing zone dimensions. There is no flow in Drainage Way No. 2 during the Non-irrigation Season so there is not a mixing zone allowed during the Non-irrigation Season, and there are end of pipe limits.

The wasteload allocation (WLA) is calculated using a mass balance equation which accounts for effluent flow, available dilution, when appropriate, background concentrations and flow, and the State approved water quality criteria. When the receiving water exceeds the criterion for the pollutant or there is no authorized mixing zone for a particular pollutant then there is no dilution available for the effluent and the State adopted criterion becomes the WLA. The parameters that have mixing zones are chlorine and ammonia during the Irrigation Season.

## 2. “End-of-Pipe” WLA

In some cases, there is no dilution available, either because the receiving water exceeds the criteria or because a mixing zone for a particular pollutant has not been authorized. When there is no dilution, the criterion becomes the WLA. Establishing the criterion as the WLA ensures that the permittee does not contribute to an exceedance of the criterion. The parameters which do not have a mixing zone and are monitored at the end-of-pipe are pH, fecal coliform, chlorine, and ammonia during the Non-irrigation Season.

### D Permit Limit Derivation

Once the WLA has been developed, EPA applies the statistical permit limit derivation approach described in Chapter 5 of the TSD to obtain daily maximum and monthly average permit limits. This approach takes into account effluent variability (through the CV), sampling frequency, and the difference in time frames between the monthly average and daily maximum limits.

The daily maximum limit is based on the CV of the data and the probability basis, while the monthly average limit is dependent on these two variables and the monitoring frequency. As recommended in the TSD, EPA used a probability basis of 95 percent for monthly average limit calculation and 99 percent for the daily maximum limit calculation. As with the reasonable potential calculation, when there were not enough data to calculate a CV, EPA assumed a CV of 0.6 for both monthly average and daily maximum calculations. Appendix F contains an example permit limit calculation.

The NPDES regulations at 40 CFR 122.45(d) require that permit limits for publicly owned treatment works (POTW) be expressed as average monthly limits (AMLs) and average weekly limits (AWLs) unless impracticable. Additionally, federal regulations do not prohibit a Permittee from increasing their sampling events above what is required in an NPDES permit. This is significant because a Permittee may collect as many samples as necessary during a week to bring the average of the data set below the average weekly effluent limit. In such cases, spikes of a pollutant could be masked by the increased sampling. While this is not a concern with pollutants that are not toxic, such as total suspended solids or phosphorus, it is a significant concern when toxic pollutants, such as chlorine or ammonia, are being

discharged. Using a maximum daily limit will ensure that spikes do not occur, and will be protective of aquatic life. In this case, an average weekly limit is not protective of water quality standards, therefore, it is not included in the permit. The final permit contains an average monthly limit and a maximum daily limit for chlorine, and ammonia.

E. Antidegradation

In addition to water quality-based limitations for pollutants that could cause or contribute to exceedances of numeric or narrative criteria, EPA must consider the State's Antidegradation policy. This policy is designed to protect existing water quality when the existing quality is better than that required to meet the standard and to prevent water quality from being degraded below the standard when existing quality just meets the standard. For high quality waters, Antidegradation requires that the State find that allowing lower water quality is necessary to accommodate important economic or social development before any degradation is authorized. This means that, if water quality is better than necessary to meet the water quality standards, limits that are less stringent than the previous permit limits can be authorized only if they do not cause degradation. Most of the limits in the draft permit are as stringent as or more stringent than those in the current permit. The one exception is the chlorine limit.

The antidegradation policy of the state of Washington is stated as follows;

- Existing beneficial uses shall be maintained and protected and no further degradation which would interfere with or become injurious to existing beneficial uses shall be allowed.
- Whenever the natural conditions of said waters are of a lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria.
- Water quality shall be maintained and protected in waters designated as outstanding resource waters.
- Whenever waters are of a high quality than the criteria assigned for said waters, the existing water quality shall be protected and pollution of said waters which will reduce the existing quality shall not be allowed, except in those instances where:
  - It is clear, after satisfactory public participation and intergovernmental coordination, that overriding considerations of the public interest will be served;
  - All wastes and other materials and substances discharged into said waters shall be provided with all known, available, and reasonable methods of prevention, control, and treatment by new and existing point sources before discharge. All activities which result in the pollution of waters from nonpoint sources shall be provided with all known, available, and reasonable best management practices; and
  - When the lowering of water quality in high quality waters is

authorized, the lower water quality shall still be of high enough quality to fully support all existing beneficial uses.

The effluent limits in the draft permit are based on current water quality criteria or technology-based limits that have been shown to not cause or contribute to an exceedance of water quality standards. Although the proposed chlorine limit is less stringent than the existing limitation, the limit maintains the existing beneficial use of the receiving water. Therefore, the discharges as authorized in the draft permit will not result in degradation of the receiving water.

#### IV. Pollutant-specific Analysis

The following parameters have been evaluated for compliance with technology and water quality-based criteria. The more stringent criteria has been included in the draft permit when applicable.

##### A. Biochemical Oxygen Demand and Total Suspended Solids

Water quality-based criteria are not available for BOD<sub>5</sub> and TSS, therefore, the technology-based criteria for secondary treatment apply. These include a weekly average limit of 45 mg/l and a monthly average limit of 30 mg/l. The technology-based limits also require 85% removal of BOD and TSS. The removal requirements are determined using the 30-day average values of the effluent concentrations.

Federal regulations at (40 CFR § 122.45 (b) and 122.45 (f)) require BOD<sub>5</sub> and TSS limitations to be expressed as mass-based limits using the design flow (1.16 mgd) of the facility. The loading is calculated as follows:

concentrations X design flow X conversion factor (8.34).

Using this formula, the facility's BOD<sub>5</sub> and TSS permit limits are:

monthly average = 30 mg/l X 1.16 mgd X 8.34 = 290 lbs/day

weekly average = 45 mg/l X 1.16 mgd X 8.34 = 435 lbs/day

##### B. Total Ammonia (as N)

The toxicity of ammonia is dependent upon pH and temperature, the criteria are also pH and temperature dependent. EPA calculated the total ammonia criteria using pH and temperature values at the edge of the mixing zone during the Irrigation Season. EPA calculated the total ammonia criteria using pH and temperature values at the end of pipe during the Non-irrigation Season. The 95<sup>th</sup> percentile temperature (23.45°C) and pH (7.85 pH) were used to represent reasonable worst-case conditions during the Irrigation Season, and 23.45°C and 7.5 pH for the Non-irrigation Season. Based on this analysis, the acute and chronic criteria for the protection of freshwater (WAC 173-201A-040) during the Irrigation Season are 7.2 mg/l and 1.3 mg/l, respectively. The acute and chronic criteria for the protection of freshwater (WAC 173-201A-040) during the Non-irrigation Season are 12 mg/l and 1.6 mg/l, respectively. There are limits for the Irrigation Season (April 1 through

October 31) and Non-rrigation Season (November 1 through March 31).

	Irrigation Season	Non-irrigation Season
Average Monthly Limit	0.9 mg/l, 8.5 lbs/day	1.1 mg/l, 10.4 lbs/day
Maximum daily Limit	1.1 mg/l, 9.1 lbs/day	1.1 mg/l, 11.1 lbs/day

C. Excess Nutrient

The Washington state water quality standards require that surface waters shall not be impaired by the presence of materials or their effects, excluding those of natural origin, which offend the senses of sight, smell, touch, or taste. Nutrients discharge from POTW facilities can contribute to algae blooms and violations of the nuisance criteria of the standards. This is not reported as a problem in the receiving water, therefore, routine nutrient monitoring is included in the permit.

D. Temperature

The water quality standards require ambient water temperature of 18°C and when natural conditions exceed 18.0°C, no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C.

Ambient and effluent monitoring for temperature have been incorporated into the draft permit, to determine if effluent limits for temperature may be necessary in the future.

E. Fecal Coliform

The water quality standards for the State of Washington require the fecal coliform organism levels in class A waters to not exceed a geometric mean value of 100 colonies/100ml, and not have more than 10% of all samples obtained for calculating the geometric mean value exceeding 200 colonies/100ml.

Fecal coliform bacteria data were collected on a monthly basis in the last permit cycle and there is no ability for the receiving water to dilute effluent discharge to the water quality standards. Therefore, the water quality standard for fecal coliform for class A waters was incorporated into the current permit and will continue to be the same in the draft permit as an end-of-pipe effluent limit for the facility.

F. Total Residual Chlorine

The acute and chronic water quality criteria for total residual chlorine for protection of aquatic life (WAC 173-201A-040) are 19 µg/L and 11 µg/L, respectively.

It is determined that there is a reasonable potential to exceed the water quality criteria for total chlorine. Therefore, limits are necessary in the draft permit to ensure that the discharge will not exceed water quality standards.

The draft permit contains total residual chlorine as monthly average and maximum

daily limits. Since flows in the receiving water vary significantly by season there are two separate seasons for the chlorine limit, one season is the Irrigation Season (April 1 through October 31) and the other is the Non-rrigation Season (November 1 through March 31). The effluent limits for chlorine are not quantifiable using EPA approved analytical methods. The EPA approved analytical methods have an interim minimum level of 0.1 mg/l (100µg/l), therefore, the facility will be in compliance if the chlorine limits are at or below the interim minimum level. See Appendix F for the calculations.

	Irrigation Season	Non-irrigation Season
Average Monthly Limit	18 µg/l	13 µg/l
Maximum Daily Limit	24 µg/l	10 µg/l

#### G. pH

In addition to limits on BOD<sub>5</sub> and TSS, 40 CFR 133.102 requires that effluent pH be within the range of 6.0 to 9.0 s.u. for POTWs. Also, the State water quality standards for protection of class A waters (WAC 1373-201A-040) requires pH to be between 6.5 to 8.5 standard units. Therefore, the minimum and maximum ranges in the draft permit is water quality-based 6.5 to 8.5 s.u.

#### H. Toxic, Radioactive and Deleterious Material

There has not been any monitoring of the City of Wapato's effluent for toxic, radioactive and deleterious material. A requirement to have three priority pollutant scans over the next five years has been included in the Permit. Similarly, a requirement to have four Whole Effluent Toxicity tests in the next permit cycle is included in the Permit.

## APPENDIX F - SAMPLE EFFLUENT LIMITATION CALCULATIONS

### NPDES Permit Limit Calculation for Chlorine

#### Step 1: Determine the appropriate criteria

##### 1A. Determine the uses

Drainage Way No. 2 is protected for the following uses: water supply (domestic, industrial, and agricultural) stock watering, fish and shellfish, wildlife habitat, recreation, and commerce and navigation.

##### 1B. Determine the most stringent criterion to protect the uses

The most stringent criterion associated with these uses is for the protection of fish and shellfish. The acute and chronic criteria for total chlorine residual are 19µg/l as a one-hour average and 11µg/l as a four-day average, respectively.

#### Step 2: Determine whether there is “reasonable potential” to exceed the criteria

##### 2A. Determine the “reasonable potential” multiplier

The “reasonable potential” multiplier is based on the coefficient of variation (CV) of the data and the number of data points. Where there are fewer than 10 data points to calculate a CV, the TSD recommends using 0.6 as a default value. In this case, there were 56 data points, and the CV of the data set is 0.14. Using the equations in section 3.3.2. of the TSD, the “reasonable potential” multiplier (RPM) is calculated as follows:

$$p_n = (1 - \text{confidence level})^{1/n}$$

where,

$p_n$  = the percentile represented by the highest concentration

$n$  = the number of samples

$$p_n = (1 - 0.99)^{1/56}$$

$$p_n = 0.92$$

This means that the largest value in the data set of 56 data points is greater than the 92<sup>th</sup> percentile.

This brings the ratio to 92<sup>th</sup>/99<sup>th</sup> which does not equal 1. Therefore, the ratio of the 99<sup>th</sup> percentile to the X<sup>th</sup> percentile is calculated, based on the equation:

$$C_p = \exp(z\sigma - 0.5\sigma^2)$$

where,

$$\sigma^2 = \ln(\text{CV}^2 + 1)$$

$$\begin{aligned}
CV &= \text{coefficient of variation} \\
&= 0.14 \\
\sigma^2 &= \ln(0.14^2 + 1) \\
&= 0.02 \\
z &= \text{normal distribution value} \\
&= 2.33 \text{ for the } 99^{\text{th}} \text{ percentile} \\
&= 1.4 \text{ for the } 92^{\text{th}} \text{ percentile} \\
C_{99} &= \exp(2.33*0.14 - 0.5*0.02) \\
C_x &= \exp(1.4*0.14 - 0.5*.002) \\
RPM &= C_{99}/C_x = 1.14
\end{aligned}$$

2B. Calculate the concentration of the pollutant at the edge of the mixing zone

There is reasonable potential to exceed criteria if the maximum projected concentration of the pollutant at the edge of the mixing zone exceeds the criterion. The maximum projected concentration is calculated from the following equation:

$$C_d = \frac{(C_e * Q_e) + (C_u * (Q_u * \%MZ))}{Q_e + (Q_u * \%MZ)}$$

where,

$$\begin{aligned}
C_d &= \text{receiving water concentration at the edge of the mixing zone} \\
C_e &= \text{maximum projected effluent concentration} \\
&= \text{maximum reported effluent concentration * reasonable potential multiplier (1 mg/l * 1.14 = 1.14 mg/l)} \\
Q_e &= \text{maximum effluent flow (1.16mgd)} \\
C_u &= \text{upstream concentration of pollutant (0 mg/l)} \\
Q_u &= \text{upstream flow 11.723 mgd for acute and chronic during Irrigation Season, and 0 mgd for acute and chronic during Non-rrigation Season.} \\
\%MZ &= \text{\% of upstream flow allowed for mixing zone (2.5\% for acute and 25\% for chronic)}
\end{aligned}$$

Irrigation Season

For the acute criterion, use the acute flow

$$C_d = \frac{(1.14*1.16) + (0*11.723*2.5\%)}{1.16 + (11.723*2.5\%)}$$

$$C_d = 0.91 \text{ mg/l}$$

For the chronic criterion, use the chronic flow

$$C_d = \frac{(1.14 * 1.16) + (0 * 11.723 * 25\%)}{1.16 + (11.723 * 25\%)}$$

$$C_d = 0.32 \text{ mg/l}$$

#### Non-irrigation Season

For the acute criterion, use the acute flow

$$C_d = \frac{(1.14 * 1.16) + (0 * 0 * 2.5\%)}{1.16 + (0 * 2.5\%)}$$

$$C_d = 1.14 \text{ mg/l}$$

For the chronic criterion, use the chronic flow

$$C_d = \frac{(1.14 * 1.16) + (0 * 0 * 25\%)}{1.16 + (0 * 25\%)}$$

$$C_d = 1.14 \text{ mg/l}$$

The projected chlorine concentrations at the edges of the acute and chronic mixing zones are at or greater than the criteria, therefore a limit must be included in the permit.

#### Step 3: Calculate the wasteload allocations

Wasteload allocations (WLAs) are calculated using the same mass balance equation used to calculate the concentration of the pollutant at the edge of the mixing zone. However,  $C_d$  becomes the acute or chronic criteria and  $C_e$  is replaced by the acute or chronic WLA. The equation is rearranged to solve for the WLA, becoming:

$$WLA_a = \frac{(C_d Q_u * \%MZ) + (C_d * Q_e) - (Q_u * C_u * \%MZ)}{Q_e}$$

#### Irrigation Season

For the acute criterion

$$WLA_a = \frac{(0.019 * 11.723 * 2.5\%) + (0.019 * 1.16) - (0 * 11.723 * 2.5\%)}{1.16}$$

$$WLA_a = 0.024 \text{ mg/l}$$

For the chronic criterion

$$WLA_c = \frac{(0.011 * 11.723 * 25\%) + (0.011 * 1.16) - (0 * 11.723 * 25\%)}{1.16}$$

$$WLA_c = 0.039 \text{ mg/l}$$

#### Non-irrigation Season

For the acute criterion

$$WLA_a = \frac{(0.019 * 0 * 2.5\%) + (0.019 * 1.16) - (0 * 0 * 2.5\%)}{1.16}$$

$$WLA_a = 0.019 \text{ mg/l}$$

For the chronic criterion

$$WLA_c = \frac{(0.011 * 0 * 25\%) + (0.011 * 1.16) - (0 * 0 * 25\%)}{1.16}$$

$$WLA_c = 0.011 \text{ mg/l}$$

The WLAs are converted to long-term average concentrations, using the following equations from EPA's Technical Support Document for Water Quality-based Toxics Control (TSD):

$$LTA_a = WLA_a * \exp[0.5\sigma^2 - z\sigma]$$

$$LTA_c = WLA_c * \exp[0.5\sigma_4^2 - z\sigma_4]$$

where,

$$\sigma^2 = \ln(CV^2 + 1)$$

$$= 0.019$$

$$\sigma_4^2 = \ln(CV^2/4 + 1)$$

$$= 0.0048$$

$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

#### Irrigation Season

$$LTA_a = 0.024 * \exp[0.5 * 0.019 - 2.326 * 0.138]$$

$$LTA_a = 0.017 \text{ mg/l}$$

$$LTA_c = 0.039 * \exp[0.5 * 0.0048 - 2.326 * 0.07]$$

$$\text{LTA}_c = 0.033 \text{ mg/l}$$

#### Non-irrigation Season

$$\text{LTA}_a = 0.019 * \exp[0.5 * 0.019 - 2.326 * 0.138]$$

$$\text{LTA}_a = 0.014 \text{ mg/l}$$

$$\text{LTA}_c = 0.011 * \exp[0.5 * 0.0048 - 2.326 * 0.07]$$

$$\text{LTA}_c = 0.009 \text{ mg/l}$$

The LTAs are compared and the most stringent is used to develop the daily maximum and monthly average permit limits. In this case, the acute LTA is the most stringent for the Irrigation Season and the chronic LTA is the most stringent for the Non-irrigation Season.

Step 4: Derive the maximum daily (MDL) and average monthly (AML) permit limits

Using the TSD equations, the MDL and AML permit limits are calculated as follows:

$$\text{MDL} = \text{LTA} * \exp[z\sigma - 0.5\sigma^2]$$

where:

$$\begin{aligned} \sigma^2 &= \ln(\text{CV}^2 + 1) \\ &= 0.019 \\ z &= 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis} \\ \text{CV} &= \text{coefficient of variation } 0.14 \end{aligned}$$

#### Irrigation Season

$$\text{MDL} = 0.017 * \exp[2.326 * 0.138 - 0.5 * 0.019]$$

$$\text{MDL} = 0.024 \text{ mg/l}$$

#### Non-irrigation Season

$$\text{MDL} = 0.009 * \exp[2.326 * 0.138 - 0.5 * 0.019]$$

$$\text{MDL} = 0.013 \text{ mg/l}$$

$$\text{AML} = \text{LTA} * \exp[z\sigma - 0.5\sigma^2]$$

where:

$$\begin{aligned}\sigma^2 &= \ln(CV^2/n + 1) \\ &= 0.00095 \\ z &= 1.645 \text{ for } 95^{\text{th}} \text{ percentile probability basis} \\ CV &= \text{coefficient of variation } 0.14 \\ n &= \text{number of sampling events required per month (20)}\end{aligned}$$

#### Irrigation Season

$$AML = 0.017 * \exp[1.645 * 0.031 - 0.5 * 0.00095]$$

$$AML = \mathbf{0.018 \text{ mg/l}}$$

#### Non-irrigation Season

$$AML = 0.009 * \exp[1.645 * 0.031 - 0.5 * 0.00095]$$

$$AML = \mathbf{0.010 \text{ mg/l}}$$

The following tables are a summary of calculated limits for the parameters of chlorine and ammonia. Ammonia was calculated the same as the limit for chlorine. The reasonable potential values are in Table E-2 and E-3. Table F-3 shows the comparison of the technology based effluent limits to the water quality based effluent limits.

<b>Table F-1 Summary of Permit Limit Derivation for Outfall 001 at Drainage Way No. 2 During the Irrigation Season</b>							
Parameter mg/l	Wasteload Allocation (WLA)		Long Term Average (LTA)		Effluent Limits		
	Acute WLA	Chronic WLA	Acute LTA	Chronic LTA	Basis	maximum daily limit (MDL)	average monthly limit (AML)
Chlorine	0.024	0.039	0.017	0.033	acute	0.024	0.018
Ammonia	8.77	1.51	2.769	0.785	chronic	1.1	0.9

<b>Table F-2 Summary of Permit Limit Derivation for Outfall 001 at Drainage Way No. 2 During the Non-irrigation Season</b>							
Parameter µg/l	Wasteload Allocation (WLA)		Long Term Average (LTA)		Effluent Limits		
	Acute WLA	Chronic WLA	Acute LTA	Chronic LTA	Basis	maximum daily limit (MDL)	average monthly limit (AML)
Chlorine	0.019	0.011	0.014	0.009	chronic	0.013	0.010
Ammonia	11.91	1.61	3.763	0.842	chronic	1.1	0.9

**Table F-3 Comparison of Technology-based Effluent Limits to Water Quality-based Effluent Limits**

Parameter	Technology-based Effluent Limits				Water quality-based Effluent Limits				Proposed Effluent Limits in Draft Permit			
	AML	AWL	IML	range	AML	AWL	IML	range	AML	AWL	IML	range
BOD <sub>5</sub>	30 mg/L	45 mg/L	—	—	—	—	—	—	30 mg/L	45 mg/L	—	—
	290 lbs/day	435 lbs/day			—	—			290 lbs/day	435 lbs/day		
BOD <sub>5</sub> , Percent Removal	85	—	—	—	—	—	—	—	85	—	—	—
TSS	30 mg/L	45 mg/L	—	—	—	—	—	—	30 mg/L	45 mg/L	—	—
	290 lbs/day	435 lbs/day			—	—			290 lbs/day	435 lbs/day		
TSS, Percent Removal	85	—	—	—	—	—	—	—	85	—	—	—
Fecal Coliform Bacteria	—	—	—	—	100/100 ml	200/100 ml	—	—	100/100 ml	200/100 ml	—	—
Total Ammonia as N (April 1 to Oct. 31) Compliance Schedule Limits	—	—	—	—	8.2 mg/l	16 mg/l	—	—	8.2 mg/l	16 mg/l	—	—
	—	—			—	—			—	—		
Total Ammonia as N (April 1 to Oct. 31)	—	—	—	—	0.9 mg/l	—	1.1 mg/l	—	0.9 mg/l	—	1.1 mg/l	—
					8.5 lbs/day		10.4 lbs/day		8.5 lbs/day		10.4 lbs/day	
Total Ammonia as N (Nov. 1 to March 31)	—	—	—	—	0.9 mg/l	—	1.1 mg/l	—	0.9 mg/l	—	1.1 mg/l	—
					9.1 lbs/day		11.1 lbs/day		9.1 lbs/day		11.1 lbs/day	
Total Residual Chlorine (April 1 to Oct. 31)	0.5 mg/L	0.75 mg/L	—	—	0.018 mg/l	—	0.024 mg/l	—	0.018 mg/l	—	0.024 mg/l	—

Total Residual Chlorine (Nov. 1 to March 31)	0.5 mg/L	0.75 mg/L	—	—	0.010 mg/l	—	0.013 mg/l	—	0.010 mg/l	—	0.013 mg/l	—
pH	—	—	—	6.0-9.0	—	—	—	6.5-8.5	—	—	—	6.5-8.5
AML means Average Monthly Limit AWL means Average Weekly Limit IML means Instantaneous Maximum Limit — means no limit												

## APPENDIX G - ENDANGERED SPECIES ACT

As discussed in Section VII.A. of this Fact Sheet, Section 7 of the Endangered Species Act requires federal agencies to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife (USFWS) regarding potential effects a federal action may have on threatened and endangered species.

### I. Threatened and Endangered Species

According to a letter from the USFWS, the following federally-listed species are in the vicinity of the discharge. Also, according to the NMFS web site located at <http://www.nwr.noaa.gov/esalist.htm>, the following federally-listed species are in the Yakima River which is downstream of the City of Wapato discharge.

#### Endangered Species:

none

#### Threatened species:

Bald eagle (*Haliaeetus leucocephalus*)  
Middle Columbia River steelhead (*O. mykiss*)  
Bull Trout (*Salvelinus confluentus*)  
Ute ladies'-tresses (*Spiranthes diluvialis*)

### II. Potential Effects for Species

#### A. Bald eagle (*Haliaeetus leucocephalus*) - Threatened

Bald eagles begin to appear at wintering sites in early November and concentrate at locations with open water during the colder months when smaller or slower moving waterbodies freeze (Spahr 1990). Diet includes fish species, mule deer, ground squirrels, rabbits, waterfowl, and other small mammals (Spahr 1990). Consumption of fish relative to other species declines in the colder months as water bodies freeze. Water quality could potentially affect bald eagles through four avenues: prey displacement or quantitative decline, prey mortality, bioaccumulation in prey, or direct consumption. One of the general recommendations for augmenting bald eagle populations is to reduce mortality through exposure to contaminants.

The bald eagle historically ranged throughout North America except for extreme northern Alaska and Canada and central and southern Mexico. A significant population of bald eagles winters in Washington and some are presumed to remain in the state year round.

As discussed above, the primary threats to bald eagles are prey displacement or mortality, bioaccumulation of contaminants through prey species, or direct exposure to contaminants. Reissuance of the NPDES permit for the City of Wapato for their domestic wastewater treatment plant discharge would not affect prey availability/distribution. Additionally, it would not result in a potential increase of toxic compounds in prey species or an increase in the potential for direct exposure to toxics. The facility discharges treated domestic waste. The proposed permit requires monitoring for potentially harmful contaminants, hence, it is not expected that reissuance of the wastewater discharge permit to the City of Wapato

Wastewater Treatment Plant (WWTP) would affect bald eagle.

C. Steelhead (*Oncorhynchus mykiss*) - Threatened

Steelhead have the most complex life histories of any Pacific salmon species. These fish have variable run timing and degree of anadromy and are capable of more than one spawning cycle. Inland steelhead of the Middle Columbia River Basin, steelhead are 'stream-maturing' as they enter freshwater in a sexually immature state and require several months in freshwater before they mature then spawn. These stream maturing fish are referred to as 'summer run' based on the time that they enter freshwater. Summer steelhead of the Columbia River subbasin have generally one potential run timing, which is the A-run. The A-run enters freshwater from June to August. A-run fish have generally spent one year in the ocean.

Steelhead can have various life histories in terms of the degree of anadromy. The anadromous form that migrates between the ocean and freshwater are termed 'steelhead', while the non-anadromous or 'resident' form does not migrate and is called 'rainbow trout'. Like steelhead, rainbow trout spawn in winter/spring and emerge in spring/early summer. In inland *O. mykiss* populations, including the Middle Columbia River basin, both anadromous and non-anadromous forms commonly co-occur. Nonanadromous *O. mykiss* of the inland type are often called Columbia River redband trout. Although both the anadromous and non-anadromous forms are classified as the same species taxonomically, the relationship of the two forms in a given area is typically unclear. The migratory and resident forms of this species may be ecophenotypes within a common gene pool or they may be distinct due to reproductive isolation (Zimmerman and Reeves 2000).

The primary factors that have affected Steelhead populations are dam construction (which restricts the ability of individuals to reach their spawning areas); and habitat loss and degradation due to human activities such as land development, logging, mining, and agriculture.

The Steelhead salmon has been listed as threatened in the Middle Columbia River basin. However, reissuance of the wastewater discharge permit to the City of Wapato WWTP would not affect Steelhead. As discussed above, the primary threats to Steelhead are dams and habitat degradation. Reissuance of the NPDES permit to the City of Wapato WWTP would not lead to increased dam construction or habitat degradation. Therefore, reissuance of this permit would not affect Steelhead.

D. Bull Trout (*Salvelinus confluentus*) - Threatened

The bull trout is a member of the char subgroup of the family Salmonidae. Bull trout population are known to exhibit two distinct life history forms: 1) resident bull trout that spend their entire life cycle in the same (or near) streams in which they were hatched, and 2) migratory bull trout which can exhibit either a fluvial life history - spawning in tributary streams where the young rear from one to four years before migrating to a river, or an adfluvial form - spawning in tributary streams where the young rear before migrating to a lake (Farley and Shepard 1989).

Bull trout generally mature at between 5 and 7 years of age (Farley and Shepard 1989; Goetz 1989; Leathe and Enk 1985). Spawning occurs from August through November (Armstrong and Murrow 1980; Brown 1994; McPhail and Murray 1979). Embryos incubate over winter and hatch in late winter or early spring (Weaver and White 1985). Emergence has been observed over a relatively short period of time after a peak in stream discharge from early April through May (Rieman and McIntyre 1993).

In-stream habitat requirements make bull trout exceptionally sensitive to activities which directly or indirectly affect stream channel integrity and natural flow patterns, including groundwater flow. Stream flow, bed load movement, and channel instability influence the survival of juvenile bull trout (Weaver 1985; Goetz 1989). The presence of fine sediments reduces pool depth, alters substrate composition, reduces interstitial spaces in substrate, and causes channel braiding, all of which can negatively impact the survival of bull trout eggs and fry. Cover, such as large woody debris, undercut banks, boulders, pools, side margins, and beaver ponds, is heavily utilized by all life stages of bull trout for rearing, foraging and resting habitat, as well as for protection from predators (USFWS 1998a). Bull trout prefer cold water, and temperatures in excess of 15°C are considered to limit their distribution (Rieman and McIntyre 1993). USACE (1999) suggested that water temperature in fact influences bull trout distribution more than any other habitat factor. Finally, migration corridors are important for sustaining bull trout populations, allowing for gene flow and connecting wintering areas to summer/foraging habitat (Rieman and McIntyre 1993).

The bull trout is threatened by habitat degradation (e.g. land management activities with negative impacts on water quality or spawning habitat); passage restrictions, mortality, or entrapment at dams; and competition from non-native lake and brook trout (USFWS 1998b). According to USACE (1999), bull trout populations are likely affected by dam operation, as well as, augmentation (i.e., spill) used to mitigate effects on salmon migration by increasing fish passage efficiency. Bull trout growth, survival and long-term population persistence are correlated with stream habitat conditions such as cover, channel stability, substrate composition, temperature, and migratory corridors (Rieman and McIntyre 1993). These habitat features are often impaired as the result of land management activities such as forest harvest, road building, hydropower development, irrigation diversions, and grazing. Mining has altered stream channel morphology, increased sediment transport and deposition, decreased vegetative cover, and contributed to acidic water discharge and heavy metal water pollution (Chapman et al. 1991).

Reissuance of NPDES permit to the City of Wapato WWTP would not affect bull trout. As discussed above, the primary threats to bull trout are changes in water temperature and habitat degradation. Reissuance of the City of Wapato NPDES permit would not lead to increased habitat degradation. In addition, the facility will be required to monitor for temperature in both its effluent and downstream of the discharge. Therefore, reissuance of the permit would not affect bull trout.

E. Ute ladies' - tresses (*Spiranthes diluvialis*) - Threatened

Ute ladies' - tresses is a perennial terrestrial orchid (family Orchidaceae). This species generally inhabits riverbanks where inundation occurs infrequently (Sheviak 1984). Ute

ladies' tresses is endemic to moist soils in mesic or wet meadows near springs, lakes, and perennial streams. The elevation range of known occurrences is 4,000 to 7,000 feet. Generally, this species occurs in areas where the vegetation is relatively open (e.g. grass and forb dominated sites), but some populations are found in riparian woodlands. This orchid is found in several areas of the interior western United States. This species has only recently been recorded on a few sites in central Washington, where it can occur at relatively low elevations (down to roughly 700 feet in Chelan County).

Urban development and watershed alterations in riparian and wetland habitat adversely affect this plant. It may also be threatened by invasions of exotic plants species such as purple loosestrife, whitetop and reed canary grass.

Reissuance of the NPDES permit to the City of Wapato WWTP would not cause an increase in any of the identified threats to the Ute ladies' - tresses. Therefore, reissuance of this permit would not have an affect on this species.

## APPENDIX H - ESSENTIAL FISH HABITAT ASSESSMENT

Essential fish habitat (EFH) is the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with the National Marine Fisheries Service (NMFS) when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge, therefore no consultation is required. This fact sheet and the draft permit will be submitted to NMFS for review during the public notice period. Any recommendations received from NMFS regarding EFH will be considered prior to final issuance of this permit.

The NMFS has requested that EFH assessments contain the following requirements:

1. **Species in the Facility Area** The NMFS recommended the following websites for specific EFH information relating to the project area:

<http://www.nwr.noaa.gov/1habcon/habweb/msa.htm>.

The Habitat Assessment Reports stated Drainage Way No. 2 has not been designated to support any species for EFH.

2. **Facility Description and Discharge Location.** The facility activities and wastewater sources are described in Part II of this Fact Sheet, and the discharge location is described in Part III.
3. **EFH Evaluation.** The EPA has tentatively determined that the issuance of this permit will not affect any EFH species in the vicinity of the discharge for the following reasons:
  - a. The proposed permit has been developed in accordance with the Washington water quality standards to protect aquatic life species in Drainage Way No. 2. The NPDES permits are established to protect water quality in accordance with State water quality standards. The standards are developed to protect the designated uses of the waterbody, including growth and propagation of aquatic life and wildlife. Self-monitoring conducted by the applicant indicates that the facility will be able to comply with all limits of the proposed permit.
  - b. The derivation of permit limits and monitoring requirements for an NPDES discharger include the basic elements of ecological risk analysis as specified in the TSD (EPA, 1991). This analysis includes, but is not limited to, the following: effluent characterization, pollutants of concern identification, threshold concentration determination, exposure considerations, dilution modeling and analysis, multiple sources and natural background consideration, fate and transport variability, and monitoring duration and frequency.

